

**National Climatic Data Center**

**DATA DOCUMENTATION**

**FOR**

**DATA SET 9641G (DSI-9641G)**

**MONTHLY AND ANNUAL HEATING AND COOLING  
DEGREE DAY NORMALS TO SELECTED BASES, 1961-90**

**December 9, 2002**

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1. **Abstract:** This data set contains 1961-90 station monthly and annual heating and cooling degree day normals derived from monthly station temperature normals and standard deviations using the Thom algorithm. The heating degree days are to twelve base temperatures and the cooling degree days are to twelve base temperatures.

The heating and cooling degree day normals in this data set were not computed from historical observed degree day data. Instrument changes and relocations can cause numerous inhomogeneities in a weather station's records. Missing daily data further complicates the process of computing degree day values. The Thom method of computing degree days was used as a solution to these problems. The rational conversion formulae developed by Thom (1954a, 1954b, 1966) allow the monthly temperature normals and their standard deviations over the 1961-90 period to be converted to degree day normals above and below any base with uniform consistency. Inhomogeneities in the temperature data were adjusted according to the procedure outlined in Owenby and Ezell (1992). The reader is referred to Thom for a detailed description of the conversion formulae and for the statistical theory behind the Thom model. The annual degree day normals were calculated by adding the corresponding monthly degree day normals.

## 2. **Element Names and Definitions:**

The data in this data set are archived in one file on one magnetic tape. The tape contains the 1961-90 monthly and annual station heating and cooling degree day normals to 12 base temperatures for heating degree days and 12 base temperatures for cooling degree days. The file has a record size of 87 characters and a block size of 4176 characters. Each record has the following format:

<u>Columns</u>	<u>Description</u>
1- 6	Station Number (the Cooperative Network/CD Number)
7- 7	Element Code. Values are: 6 = heating degree days 7 = cooling degree days
8- 9	Base Temperature (degrees Fahrenheit). Values are: For heating degree days: 70, 65, 60, 57, 55, 50, 45, 43, 40, 35, 32, 30 For cooling degree days: 32, 40, 43, 45, 50, 55, 57, 60, 65, 70, 75, 80
10-15	Degree Day Normal Value for January (in whole degree days)
16-21	" Value for February
22-27	" Value for March
28-33	" Value for April
34-39	" Value for May
40-45	" Value for June
46-51	" Value for July
52-57	" Value for August
58-63	" Value for September
64-69	" Value for October
70-75	" Value for November
76-81	" Value for December
82-87	Annual Value

3. **Start Date:** 19610101

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4. **Stop Date:** 19901231

5. **Coverage:** the USA

- a. Southernmost Latitude: 15S
- b. Northernmost Latitude: 72N
- c. Westernmost Longitude: 64W
- d. Easternmost Longitude: 121E

6. **How to Order Data:**

Ask NCDC's Climate Services about the cost of obtaining this data set.  
Phone: 828-271-4800  
FAX: 828-271-4876  
E-mail: [NCDC.Orders@noaa.gov](mailto:NCDC.Orders@noaa.gov)

7. **Archiving Data Center:**

National Climatic Data Center  
Federal Building  
151 Patton Avenue  
Asheville, NC 28801-5001  
Phone: (828) 271-4800.

8. **Technical Contact:**

National Climatic Data Center  
Federal Building  
151 Patton Avenue  
Asheville, NC 28801-5001  
Phone: (828) 271-4800.

9. **Known Uncorrected Problems:** None.

10. **Quality Statement:** High Quality. The source temperature data were adjusted for some inhomogeneities (e.g., instrument changes, time of observation changes) at some stations (see Owenby and Ezell, 1992), however some temperature biases may exist for some stations (e.g., urban heat island).

Missing values in the temperature source data were estimated (see Owenby and Ezell, 1992).

11. **Essential Companion Datasets:** DSI-9641 - 1961-90 Monthly Station Normals.

12. **References:** No information provided with original documentation.

Guttman, N.B., 1989: "Statistical descriptors of climate". BULLETIN OF THE AMERICAN METEOROLOGICAL SOCIETY, vol. 70, pp. 602-607.

National Climatic Data Center, 1992: ENVIRONMENTAL INFORMATION SUMMARY C-23: 1961-90 CLIMATIC NORMALS. U.S. Department of Commerce, National Oceanic and Atmospheric Administration, National Climatic Data Center, Asheville, NC.

Owenby, J.R. and D.S. Ezell, 1992: CLIMATOGRAPHY OF THE UNITED STATES NO. 81: MONTHLY STATION NORMALS OF TEMPERATURE, PRECIPITATION, AND HEATING AND COOLING DEGREE DAYS 1961-90 (by state). U.S. Department of Commerce, National Oceanic

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and Atmospheric Administration, National Climatic Data Center, Asheville, NC.

Owenby, J.R., D.S. Ezell, and R.R. Heim Jr., 1992: CLIMATOGRAPHY OF THE UNITED STATES NO. 81 SUPPLEMENT NO. 2: ANNUAL DEGREE DAYS TO SELECTED BASES DERIVED FROM THE 1961-90 NORMALS. U.S. Department of Commerce, National Oceanic and Atmospheric Administration, National Climatic Data Center, Asheville, NC.

Thom, H.C.S., 1954a: "The rational relationship between heating degree days and temperature", MONTHLY WEATHER REVIEW, vol. 82, pp. 1-6.

Thom, H.C.S., 1954b: "Normal degree days below any base", MONTHLY WEATHER REVIEW, vol. 82, pp. 111-115.

Thom, H.C.S., 1966: "Normal degree days above any base by the universal truncation coefficient", MONTHLY WEATHER REVIEW, vol. 94, pp. 461-465.